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| **SBI3C - Microbiology Strand - Antibiotic Resistance** | |
| **Curriculum Expectations**:   * C2.1 Use appropriate terminology related to microbiology, *such as conjugation, pathogen and plasmid* * C3.2 Explain the different methods of reproduction in various types of bacteria, viruses and fungi * C3.5 Describe how different viruses, bacteria and fungi can affect host organisms and how those effects are normally treated or prevented | |
| **Learning Goals – Students will be able to**:  Students will be able to:   * Determine the method in which bacterial cells acquire new genes through conjugation * Understand how bacteria production can become resistant to antibiotics * Participate in real-life scenarios to determine the rate in which bacteria develop resistance to new antibiotics | |
| **Glossary** | |
| Horizontal Gene Transfer  Antibiotic Resistance  Plasmids  Conjugation | Antibiotic  Gene Frequency  Mutation |
| **Assessment Evidence:**   * Model horizontal gene transfer through paper bag activity * Complete *Arm Race with a Superbug* handout to track spread of antibiotic resistance * Predict future outcomes in accordance to collaborated data/results * Evaluate real-life scenarios through discussion | **Evaluation**:   * Quiz on the topic * Short answer question on unit test (*e.g. reflecting on in-class activity, if you have an infection and your doctor prescribes an antibiotic...)* |
| **Learning Plan**:   * What Microbe Are You? - [Personality Quiz](http://cmore.soest.hawaii.edu/education/kidskorner/eng_6up_quiz/ur_q1.htm) * Review conjugation through [animation](http://www.hhmi.org/biointeractive/animations/conjugation/conj_middle_frames.htm) * Arms Race With a Superbug hands-on interactive activity * Discuss the outcomes/reasoning of activity with obtained student results * Evolution of antibiotic resistance [animation](http://www.pbs.org/wgbh/evolution/library/10/4/l_104_03.html) * Real-life follow-up discussion questions | |
| **References:**  <http://www.pbs.org/wgbh/nova/education/activities/0303_04_nsn.html> - Killer Microbe Lesson Plan <http://cmore.soest.hawaii.edu/education/kidskorner/eng_6up_quiz/ur_q1.htm> - Microbe Personality Quiz | |